UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/824,291	04/14/2004	Jeffrey D. Muhs	0735.3 (63967.US)	6054

67253 7590 01/07/2009

ORNL-UTB-LUEDEKA, NEELY & GRAHAM
P.O. BOX 1871
KNOXVILLE, TN 37901

EXAMINER	
MOWLA, GOLAM	

ART UNIT	PAPER NUMBER
1795	

MAIL DATE	DELIVERY MODE
01/07/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/824,291
Filing Date: April 14, 2004
Appellant(s): MUHS ET AL.

Patrick B. Horne
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed on 10/10/2008 appealing from the Office action mailed 05/28/2008.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

Muhs et al., "Design and Analysis of Hybrid Solar Lighting and Full-Spectrum Solar Energy Systems", Solar 2000, July 16-21, 2000, American Solar Energy Society.

US 5271079 Levinson 12-1993

US 3626040	Nagao et al.	05-1887
US 6416181	Kessler et al.	07-2002

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1, 3, 5, 6, 9 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Muhs et al. ("Design and Analysis of Hybrid Solar Lighting and Full-Spectrum Solar Energy Systems", 2000) in view of Levinson (US 5271079).

As to claim 1, Muhs discloses a hybrid solar energy distribution system (hybrid lighting system, Figure 3, and described in the first paragraph in left column of page 3) with a preferred design for its collector (preferred design for the hybrid solar collector, Figure 6a). Muhs discloses that a receiver for receiving visible light (concentric fiber mount assembly 3 along with the large core optical fibers 4) that contains at least one fiber (4); a receiver housing (the housing surrounds the fibers and is shown in both Figures 6a and 6b), a fiber at least partially disposed in said housing (as detailed in Figure 6b), said fiber further transmitting visible light to a light distribution system ("light distribution system," 3, first paragraph in left column of page 3) further comprising at least one fiber distribution panel (3) (Figure 6b and 7); at least one hybrid luminaire ("hybrid luminaires," 5, in left column of page 3), and a means for controlling at least one of said hybrid luminaire and said light distribution system ("hybrid lighting control systems," 4, in left column of page 3). What Muhs fails to disclose is a mixing rod removably disposed in said receiver housing.

Levinson discloses a light mixing device that uses a mixing rod (14) to take supplied from a plurality of light generating devices and direct it evenly to a plurality of optical fibers (56) (see fig. 1 and 2). Levinson teaches the use of said mixing rod to "collect more of the light emitted from a light source and supply that light to a plurality of optical fibers" (Column 2, lines 29-31). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the mixing rod of Levinson to the receiver of Muhs in order to collect more of the light emitted from the light source (i.e., the sun) and supply that light to the plurality of optical fibers (large core optical fibers, 4).

As to claim 3, Muhs teaches that the hybrid luminaries may incorporate "light originating from two or more sources, at least one being natural and another being electric" in the bottom paragraph of the right column of page 3. Muhs specifies sunlight as a natural lighting source for the hybrid luminaries in the second paragraph from the bottom in the left column of page 3 with the sentence: "Hybrid lighting systems will depend on electric lamps when sunlight is incapable of supplying sufficient levels of illumination such as on cloudy, overcast days and at night." Muhs further specifies that the electric source may be "conventional fluorescent lamps located in luminaries" in the bottom paragraph of the left column of page 3.

As to claim 5, Muhs discloses a hybrid collector (preferred design for the hybrid solar collector, Figure 6a). Muhs discloses a primary mirror for producing reflected full spectrum solar radiation (primary mirror, 1, Figure 6a), as well as a Secondary Optical Element (Secondary Optical Element, 2) whose purpose is to "focus visible, nondiffuse solar energy onto a series of centrally located, large-core optical fibers, while at the

same time focusing the rejected infrared (IR) solar radiation onto a concentrating PV cell located at the back of the secondary optical element" (bottom paragraph of left column, page 4). This Secondary Optical Element reflects visible light and, therefore, is a secondary mirror. In fact, it is referred to as a "spectrally selective cold mirror" by Muhs in the top paragraph of the left column of page 4. Said Secondary Optical Element can also be considered to be a filter in the sense that it filters the solar radiation into visible light before it reflects it onto the fiber receivers (concentric fiber mount assembly, 3, along with the large core optical fibers, 4), as recited above and originally described in the bottom paragraph of the left column on page 4. Muhs further discloses a receiver for receiving visible light that contains at least one fiber; a receiver housing (the housing surrounds the fibers and is shown in both Figures 6a and 6b), a fiber at least partially disposed in said housing (as detailed in Figure 6b). Muhs further discloses at least one fiber distribution panel (3) (Figure 6b); at least one hybrid luminaire/hybrid luminaires (5) (column 1, p.3), and a means for controlling at least one of said hybrid luminaire and said light distribution system/hybrid lighting control systems (4) (column 1, p.3). However, Muhs fails to disclose is a mixing rod removably disposed in said receiver housing.

Levinson discloses a light mixing device that uses a mixing rod (14) to take supplied from a plurality of light generating devices and direct it evenly to a plurality of optical fibers (56) (Figures 1 and 2). Levinson teaches that the use of said mixing rod is effective to "collect more of the light emitted from a light source and supply that light to a plurality of optical fibers" (Column 2, lines 29-31).

It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the mixing rod of Levinson to the receiver of Muhs in order to collect more of the light emitted from the light source (i.e., the sun) and supply that light to the plurality of optical fibers (large core optical fibers, 4).

As to claim 6, the secondary mount supporting the secondary mirror (in the Secondary Optical Element) of Muhs is shown in Figure 6a. Said structure is non-rigid in the sense that it allows the tilting of the eight flat sections of the secondary mirror by 2° (top paragraph, right column, page 5). Although Muhs quotes a blocking fraction of 5 % (top paragraph, right column, page 5), he also states that this fraction can be reduced upon routine optimization by one skilled in the art. In the same paragraph he states that such "optimization routines will likely reduce the blocking fraction to less than 3.0 % in future designs."

As to claim 9, Muhs shows the positioning of multiple collectors in a mirror farm array in Figure 5 and refers to the sun tracking system in Figure 6a (conventional rotational tracking mechanism, 6). Muhs mentions explicitly that these are solar collectors (caption, Figure 5). Therefore, the purpose of their tracking mechanisms is to track a single object (i.e., the sun). It would have been obvious to one of ordinary skill in the art to connect them to a single tracking system that tracks the position of the sun.

As to claim 11, Muhs describes an initial embodiment of the secondary mirror, which is part of said Secondary Optical Element, in the top paragraph of the right column of page 5 that "made of up of eight flat sections."

Claims 4 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Muhs in view of Levinson as applied to claims 1 and 5 above, and further in view of Nagao et al. (US 3626040).

Applicant is directed above for complete discussion of Muhs in view of Levinson teaches with respect to claims 1 and 5, which is incorporated herein. Muhs further teaches that the system contains a bundle of fibers (approximately eight 18-mm large-core optical fibers, 4, Figure 6a). However, the references fail not teach that the fiber bundle comprises a thermally compressed fiber bundle.

Nagao et al. teach a method for making fused bundles of light-conducting fibers in which the fibers are placed within a mold, "heated to fusing temperature and compressed" with the aid of an applied pressure. As explained in column 1, lines 24-26, the fiber bundles resulting from this process have the advantage of being virtually free of "non-uniform distortions" and, therefore, improved optical performance.

It would have been obvious to one of ordinary skill in the art at the time of the invention to replace the fiber bundles of the modified device of Muhs with the thermally compressed fiber bundles of Nagao et al. in order to improve the optical performance of the latter by virtually eliminating non-uniform distortions in the fiber bundle.

Claims 10 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Muhs in view of Levinson as applied to claim 5 above, and further in view of Kessler et al. (US 6416181).

The combination of Muhs and Levinson above discloses all of the features of claim 5 and describes an initial embodiment of the secondary mirror, which is part of said Secondary Optical Element, in the top paragraph of the right column of page 5 that "made of up of eight flat sections". What the modified device of Muhs fails to provide is the primary mirror is segmented into multiple sections.

Kessler discloses a large curved mirror (24) similar in shape and reflective function to the primary mirror of Muhs as part of a monocentric autostereoscopic optical apparatus (Figure 1). As Kessler explains in column 12 lines 9-13, it is less expensive and more practical to assemble such a curved mirror from "two or more smaller mirror segments."

It would have been obvious to one of ordinary skill in the art at the time of the invention to provide segmented mirror of Kessler et al. as the primary mirror in the collector of the modified device of Muhs in order to provide for a less expensive and more practical assembly of said mirror.

(10) Response to Argument

Appellant argues that "neither Muhs nor Levinson disclose a fiber distribution panel as claimed in claims 1 and 5" (see page 4 of Appeal Brief).

The Examiner respectfully disagrees. Muhs discloses a fiber distribution panel (concentric fiber mount assembly 3) (see fig. 6a, 6b and 7) through which fibers (optical fibers 4 as shown in fig. 6a and 6b) are distributed (see also fig. 7).

The Appellant also states that "the undersigned has reviewed Muhs and can find no description or depiction of a fiber distribution panel as described and claimed in the application on appeal (reference number 124 as shown in Figure 8 of the application on appeal, reproduced below)" (see page 5 of Appeal Brief).

Muhs, as stated above, discloses a fiber distribution panel (concentric fiber mount assembly 3) (see fig. 6a, 6b and 7) through which fibers (optical fibers 4 as shown in fig. 6a and 6b) are distributed (see also fig. 7).

Appellant also argues that "Examiner is making an assumption that the Muhs reference discloses a plug and play fiber distribution panel, because there is no evidence or suggestion in the Muhs reference of a plug and play fiber distribution panel as described, shown in Figure 8, and claimed" (see page 5 of Appeal Brief).

The Examiner respectfully disagrees. Examiner is not making the assumption that Muhs discloses specific type of fiber distribution panel, inter alia, plug and play type fiber distribution panel. The Examiner only takes the position that the Muhs disclose a fiber distribution panel, be it any type. It is evident from fig. 6b of Muhs that concentric fiber mount assembly 3 functions as the fiber distribution panel as the optical fibers 4 are distributed from the fiber mount assembly 3. In addition, in response to Appellant's argument that the references fail to show certain features of Appellant's invention, it is noted that the features upon which Appellant relies (i.e., plug and play) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/G. M./

Examiner, Art Unit 1795

Conferees:

/Alexa D. Neckel/

Supervisory Patent Examiner, Art Unit 1795

/Christopher A. Fiorilla/

Chris Fiorilla

Supervisory Patent Examiner, Art Unit 1700